

What is claimed is:

- 1 1. Apparatus for indexing a Web page which incorporates multimedia data by reference to one
2 or more resources which supply said multimedia data, said method comprising, in combination:
 - 3 means for analyzing said web page to identify at least one markup tag containing a
4 reference to a given one of said resources,
 - 5 means for selecting and executing a media processing program for analyzing the content
6 of the multimedia data supplied by said given one of said resources to generate metadata
7 describing said content,
 - 8 means for formatting said metadata into a character-based text annotation,
 - 9 means for combining said Web page and said annotation to form an enhanced Web
10 page, and
 - 11 means for indexing said enhanced Web page.
- 1 2. Apparatus as set forth in claim 1 wherein said means for selecting and executing a media
2 processing program comprises means for determining the particular data type of the multimedia
3 data supplied by said given resource and means for selecting a processing program for
4 analyzing multimedia data formatted in accordance with said particular data type.
- 1 3. Apparatus as set forth in claim 1 wherein said means for formatting said metadata comprises
2 means for generating a text data annotation expressed in accordance with the Extensible
3 Markup Language.
- 1 4. Apparatus as set forth in claim 1 including means for acquiring additional metadata which
2 describes the multimedia data supplied by said given one of said resources, and means for
3 including said additional metadata in said character-based text annotation.

1 5. Apparatus as set forth in claim 4 wherein at least some of said additional data includes
2 information obtained from said one markup tag.

1 6. Apparatus as set forth in claim 4 wherein said given resource is accessed through the
2 operating system of a computer which provides said given resource and wherein at least some
3 of said additional data includes information obtained from said operating system.

1 7. Apparatus as set forth in claim 4 wherein at least some of said additional information is
2 obtained via the Internet.

8. Apparatus for collecting and storing metadata describing a hypertext Web page, said Web
page including markup tags which identify multimedia data from one or more different external
resources, said apparatus comprising, in combination,

 a parser for identifying said markup tags in said Web page,

 processing means for analyzing the content of said multimedia data identified by said
markup tags to generate metadata describing said multimedia data,

 means for translating said metadata into a character-based text annotation describing
said multimedia data, and

 means for storing the combination of a copy of said Web page and said annotation to
form an enhanced Web page suitable for processing by text-based indexing and searching
facilities.

1 9. Apparatus as set forth in claims 8 wherein said text annotation is expressed in the Extensible
2 Markup Language.

1 10. The method of automatically enhancing the content of a Web page which contains
2 multimedia data incorporated by reference which comprises, in combination, the steps of:
3 identifying one or more markup tags in said Web page which respectively identify one
4 or more external resources which provide said multimedia data;
5 generating metadata which describes said multimedia data,
6 translating said metadata into a character-based text annotation, and
7 inserting said annotation into said Web page to form an enhanced Web page suitable for
8 processing by a character-based text processing system.

1 11. The method of automatically enhancing the content of a Web page as set forth in claim 10
2 wherein said step of identifying one or more markup tags comprises the steps of first
3 identifying markup tags in said Web page and extracting the uniform resource locator (URL) of
4 one of said external resources from at least selected ones of said markup tags.

1 12. The method of automatically enhancing the content of a Web page which contains
2 multimedia data as set forth in claim 10 wherein said step of generating metadata includes the
3 sub-steps of retrieving said multimedia data from said one or more external resources and
4 analyzing the content of said multimedia data to extract said metadata therefrom.

1 13. The method of automatically enhancing the content of a Web page as set forth in claim 12
2 wherein said step of generating metadata comprises the sub-steps of identifying the data type of
3 the multimedia data from each of said resources and then selecting a processing routine for
4 multimedia of the identified data type from each of said resources.

1 14. The method of automatically enhancing the content of a Web page as set forth in claim 10
2 includes the further step of indexing said enhanced Web page to provide access to said Web
3 page in response to queries expressing one or more attributes expressed in said text annotation.

1 15. The method of automatically enhancing the content of a Web page as set forth in claim 10
2 includes the further step of searching the content of said enhanced Web page in response to a
3 search request to determine if attributes expressed in said search request are contained in said
4 text annotation.

1 16. The method of automatically enhancing the content of a Web page as set forth in claim 13
2 includes the further step of indexing said enhanced Web page to provide access to said Web
3 page in response to queries expressing one or more attributes expressed in said text annotation.

1 17. The method of automatically enhancing the content of a Web page as set forth in claim 13
2 includes the further step of searching the content of said enhanced Web page in response to a
3 search request to determine if attributes expressed in said search request are contained in said
4 text annotation.